



TAMDAR

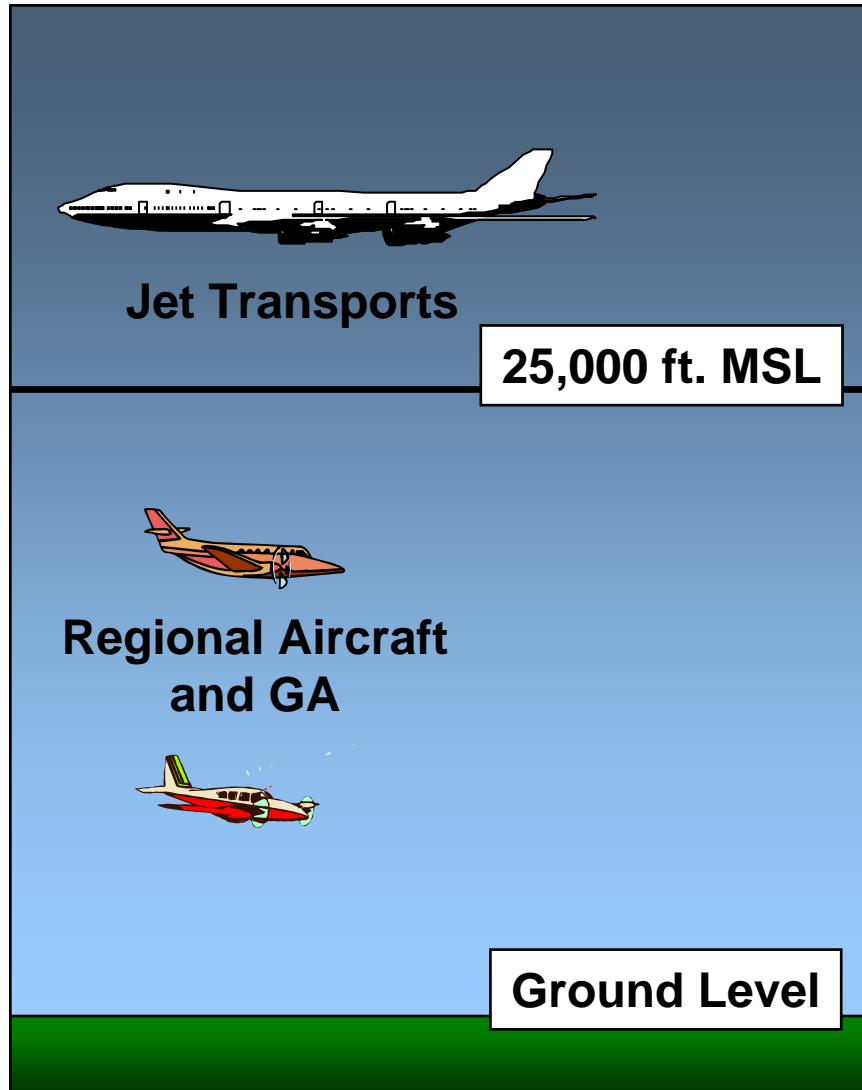
Overview, Update, and Accomplishments

Weather Accident Prevention Review
September 20, 2005

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Airborne Weather Reporting



Targeted Problem:

Inaccurate and unreliable aviation weather forecasts due to the lack of sufficient atmospheric data collection in the lower atmosphere.

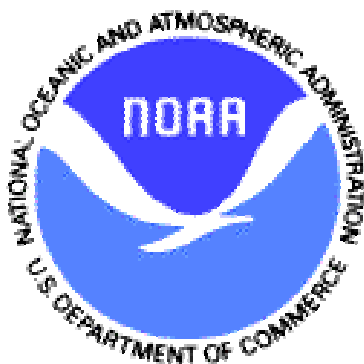
Pilots, weather briefers, forecast modelers and controllers need reports of moisture, temperature, winds, turbulence, and icing at all flight levels.



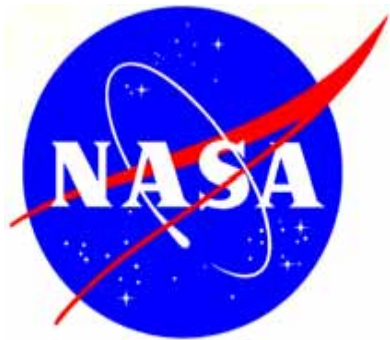
Tri-Agency Leadership



Concept
of Operations



Measurement
Requirements



Sensor
Development

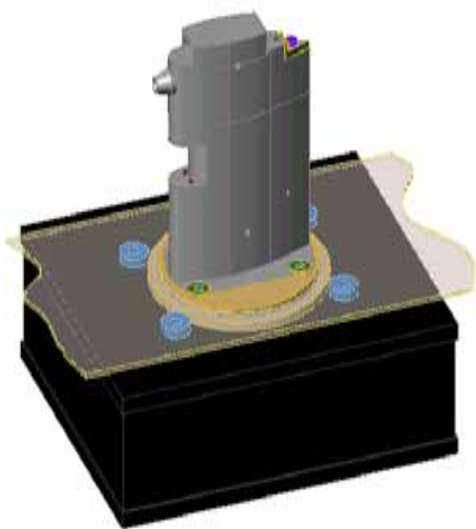
In September 2001, the
TriAgency Team
completed:

“Operational Concepts for
Collection and
Dissemination of Aircraft
Derived Meteorological
Information”

Provides details on sensor
requirements and
minimum specifications.



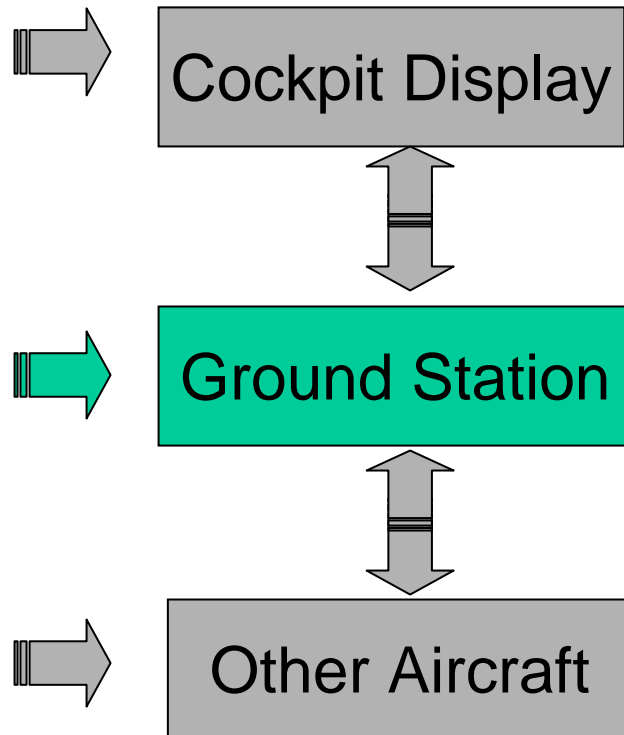
TAMDAR Concept



TAMDAR Sensor

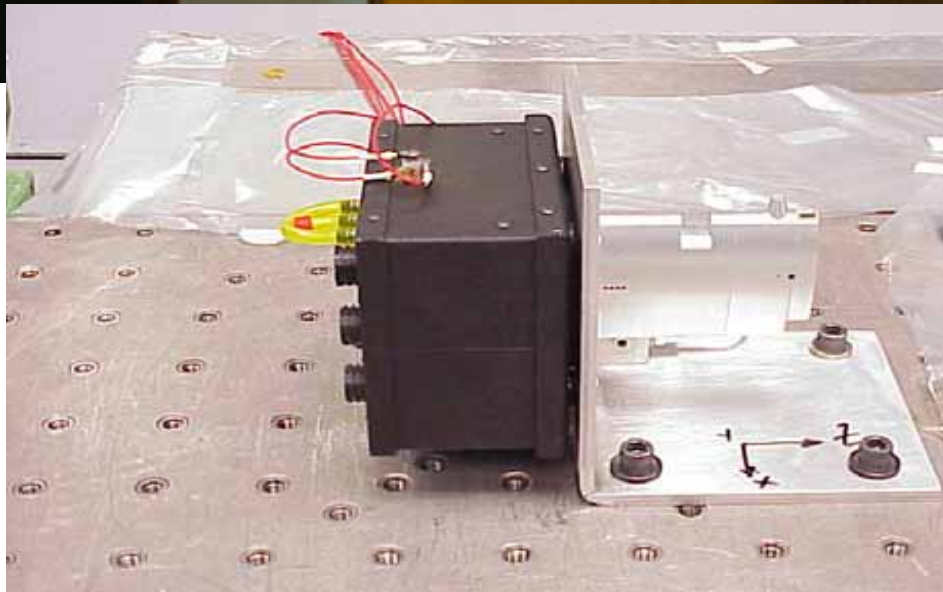
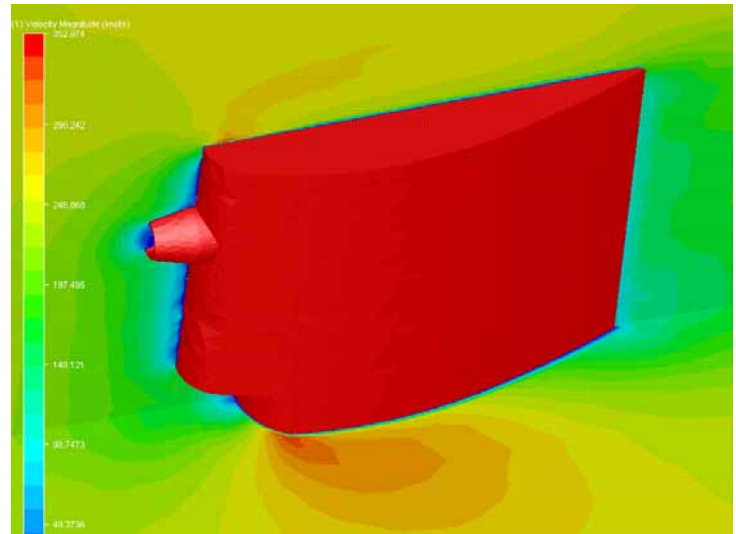
Icing
Temperature
Pressure Altitude
Humidity
Time
Lat / Long
Winds*
Turbulence*
True Airspeed*

*computed





Sensor Development & Testing





TAMDAR Flight Tests



NOAA P3



UND Citation



NASA Twin Otter



NPGS Twin Otter



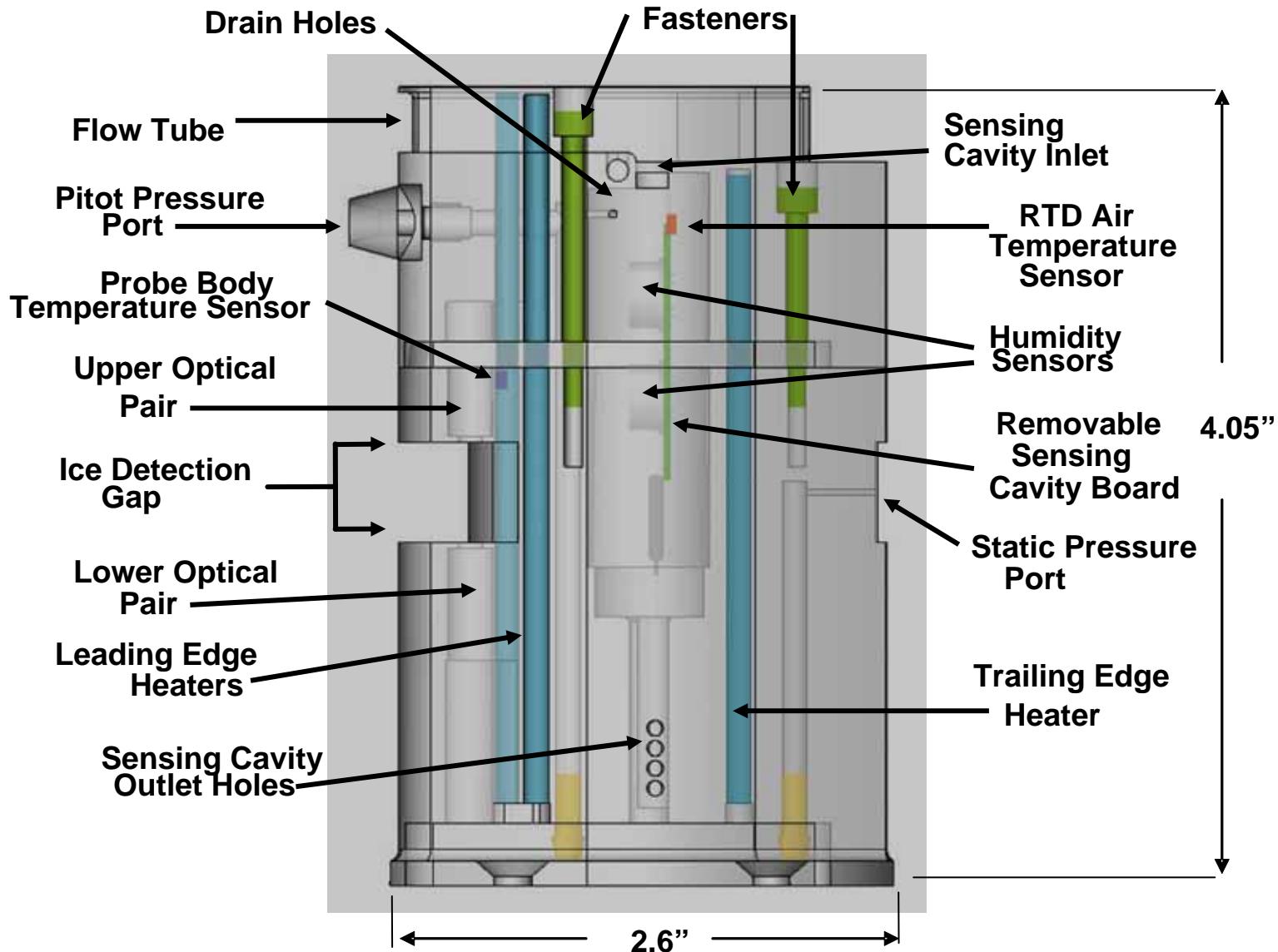
UND Seminole



NASA C-206

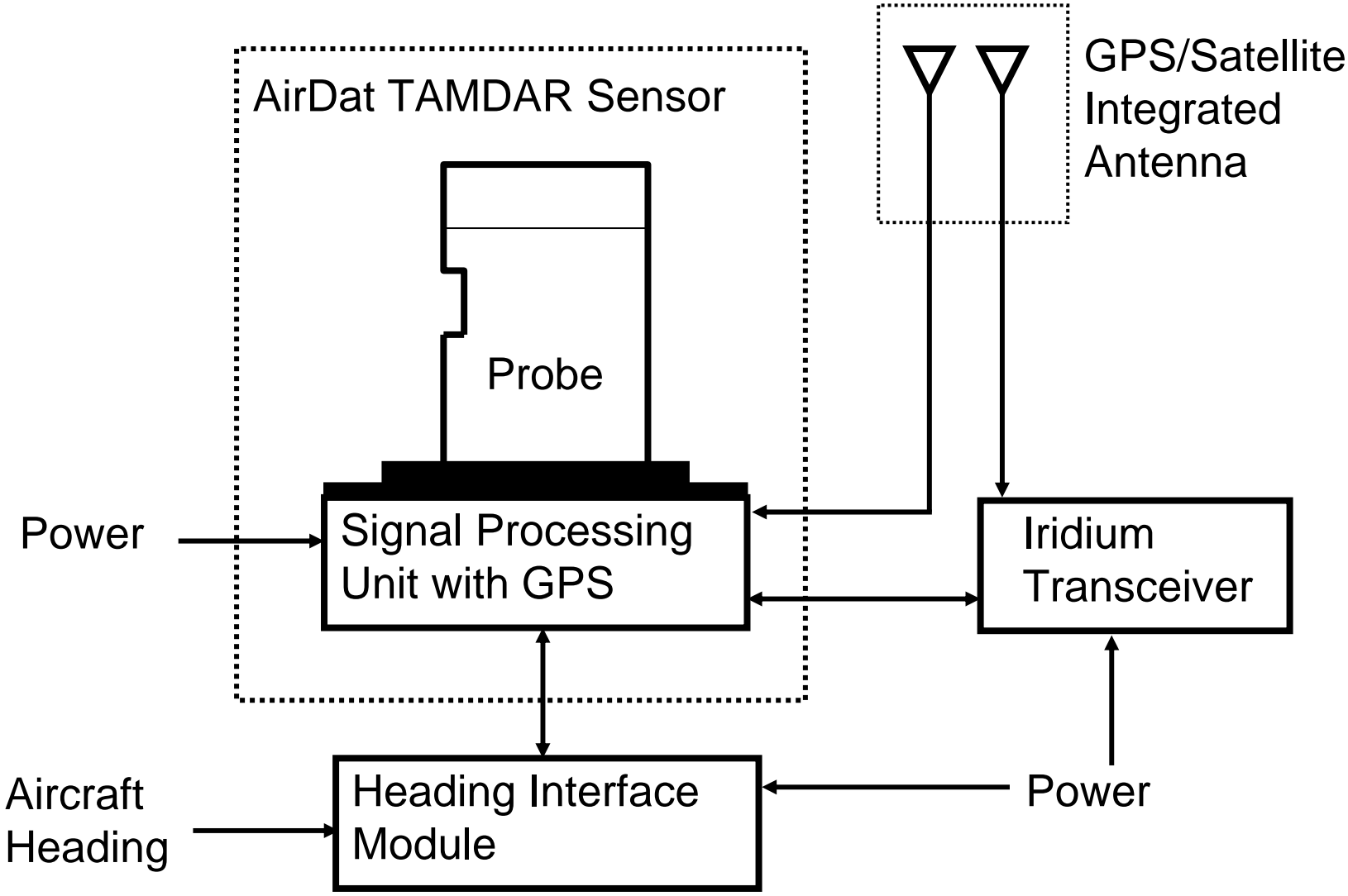


TAMDAR Sensor



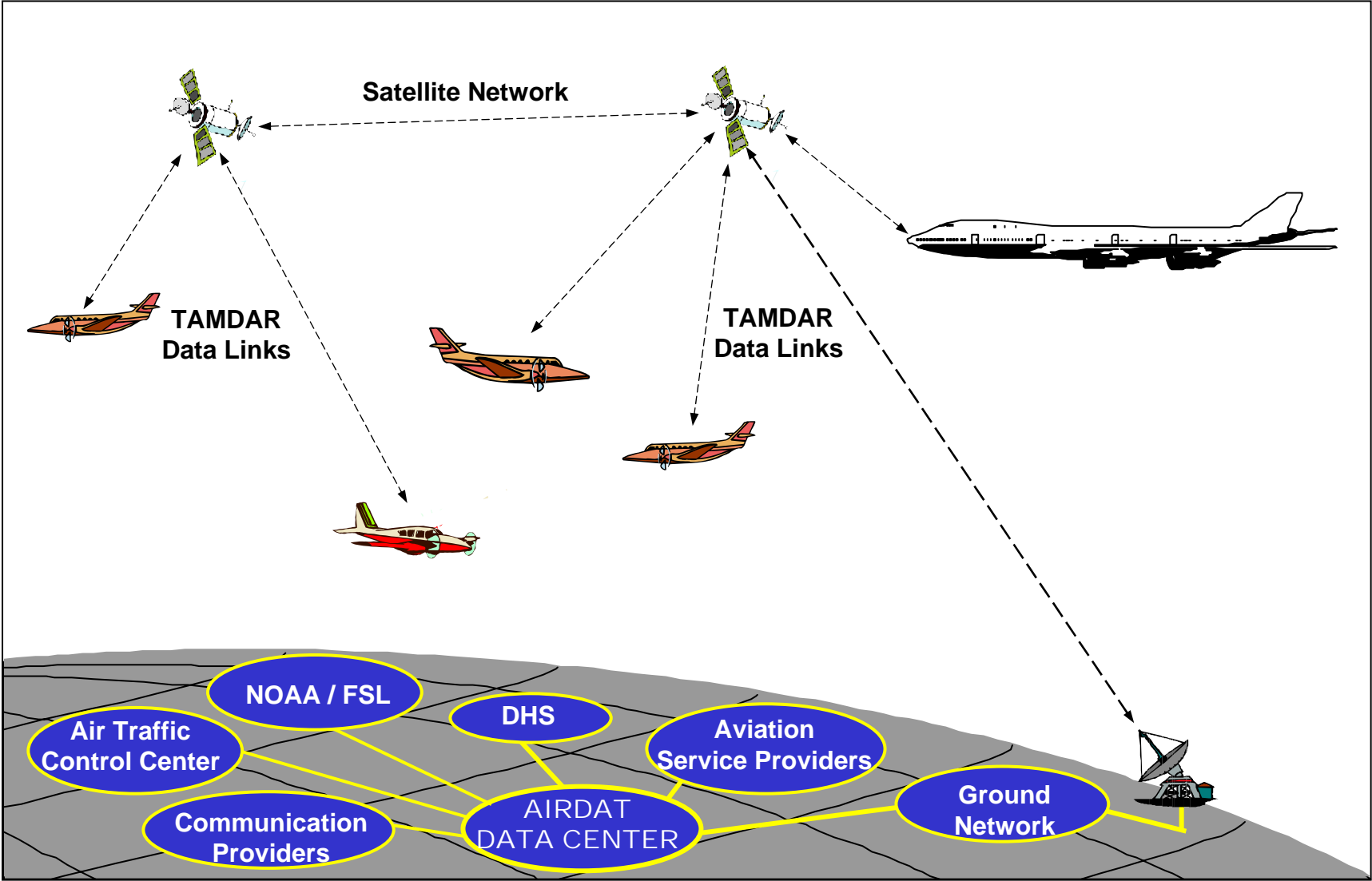


TAMDAR System



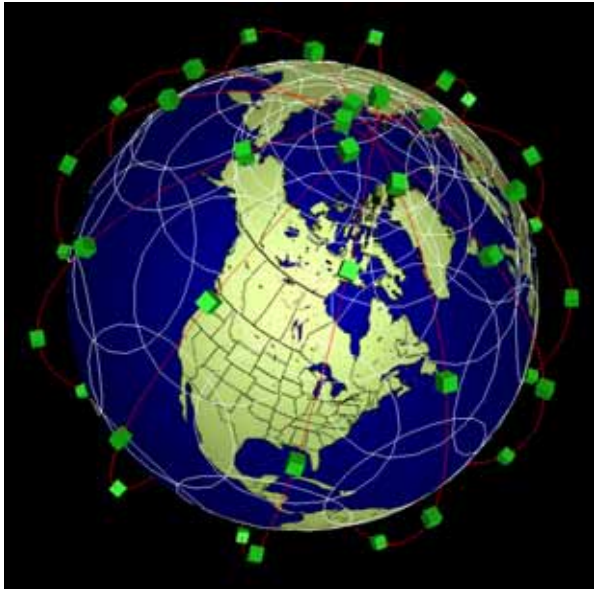


AirDat Network





TAMDAR System Capabilities



Iridium network

- High resolution ascent/descent data at all airports
- Vertical profiles at several hundred locations
- En-route data from lower flight levels
- Dedicated system control/calibration from the ground
- Field replaceable sensors
- Icing, turbulence, wind data on all equipped aircraft
- Data latency is typically 10-18 seconds

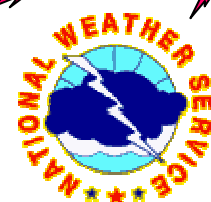


Great Lakes Fleet Experiment



AIRDAT

FORECAST
SYSTEMS
LABORATORY



National Centers
for
Environmental Prediction



Environment
Canada

Environnement
Canada



<http://www.crh.noaa.gov/tamdar/>



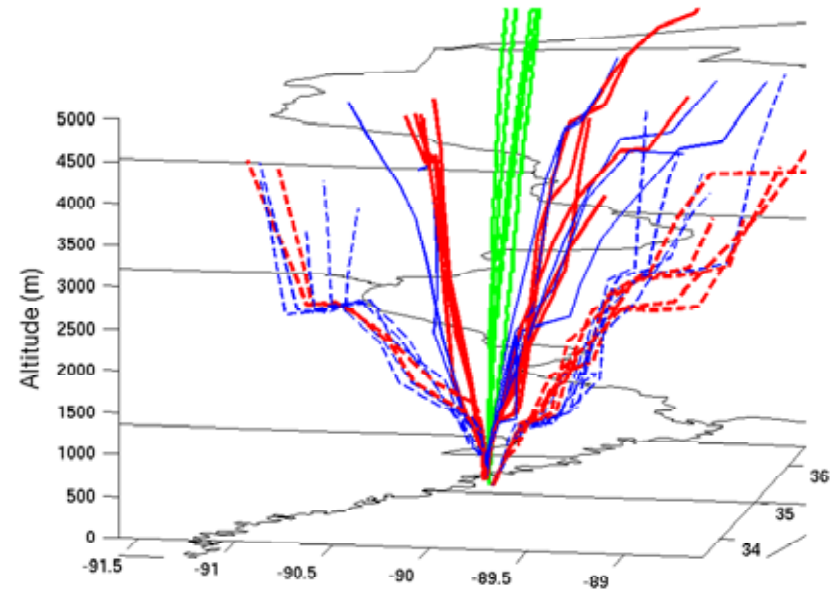
- [illegible]

Saab 340 routes shown in green



Status of GLFE

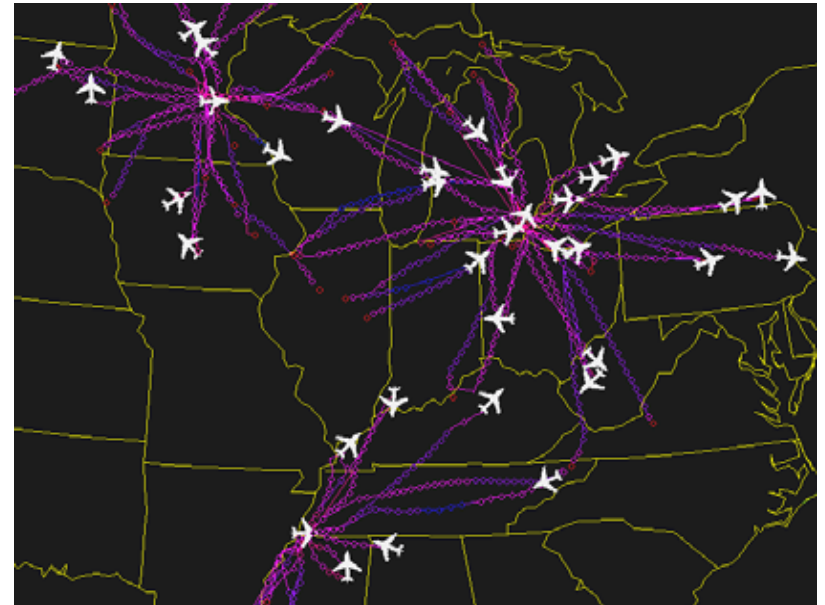
- GLFE extended (FAA funded)
- International Symposium
- Analysis of Memphis-CIMSS deployment data sets
- Impact studies (NCAR)
 - Current Icing Potential
 - Convective Precipitation
 - Precipitation Forecast Skill
 - Turbulence Impact





Planned TAMDAR Coverage

- AirDat to add aircraft fleets over next two years
- CONUS coverage can be achieved with ~600 aircraft
- Eventual equipage goals: 1,500 CONUS and 1,500 international





Regulations and Certification

- TriAgency Team “Operational Concepts for Collection and Dissemination of Aircraft Derived Meteorological Information” (2001)
- FAA STC on Saab 340 (2004)
- RTCA SC-206 (Ongoing)
 - Revise DO-267A and DO-252
 - Create new document for aeronautical information services.

TAMDAR impact coming up...

Aviation Weather Modeling Results

– Mark Anderson

**Impact of TAMDAR Data on RUC
Model Output**

– Bill Moninger

**Aviation Forecast Applications of
TAMDAR**

– Rich Mamrosh

